English Entomological Methods in the Seventeenth and Eighteenth Centuries

PART I: TO 1720

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P. B. M. Allan's chapter on collecting methods in *A Moth-Hunter's Gossip* has given us an interesting introduction to the ways of eighteenth-century English entomologists, but something remains to be said both of them and their predecessors. Our present scientific attitude towards entomology was born as part of the intellectual revolution of the seventeenth century; animated by the spirit which created the Royal Society of London and inspired by the works of Swammerdam and Goedart, such English naturalists as John Ray and James Petiver set out to collect insects and study their metamorphoses. Not the least interesting aspect of their quest is the way in which it was carried out. Very little has been published concerning collecting, rearing and preserving methods before the middle of the eighteenth century, yet the manuscript remains of an earlier period give us much information.

John Ray did not begin his entomological investigations until relatively late in life, and we should like to know more about the collecting methods of the era that preceded the formation of the *Historia Insectorum*. As was necessary in an age of reorientation, many collectors did not rise above the level of accumulation; such a figure was William Courten, alias Charlton (1642-1702), grandson of the wealthy merchant Sir William Courten, whose ships discovered and colonized the Barbadoes. The younger Courten was primarily a botanist. The friend of Tournefort and Hans Sloane, he studied at Montpellier, travelled through Europe and expended a fortune in forming a natural history cabinet which was deposited in 1684 as a museum in his rooms at the Middle Temple[1]. We know little of Courten as a field entomologist, but he purchased large numbers of exotic insects and his collection of Lepidoptera was surely the finest in England before Petiver's. His manuscripts, preserved in the British Museum, give us at least some idea of the methods he used and recommended. There is a MS. in his hand titled "Receipts for Preserving Natural Products" and containing formulae in French, English, Latin and Italian, probably culled from various sources. He produced a liquor for preserving heavy-bodied insects by distilling myrrh, aloes and saffron in turpentine and brandy, and another by collecting the distillate of camphor, sage and turpentine[2]; a French process for killing and preserving insects deserves to be quoted *in extenso*[3].

Courten helped to finance several collecting ventures. When his cousin Posthumus Salwey journeyed to Gibraltar late in the 1680's he had directions to capture insects of all sorts. Butterflies were to be "fastned with pinns to a box"; beetles "not being so apt to decay as ye other Insects" would be preserved "if put in a small deale box only with a little Cotton ouer ym to keep ym close together yt they bee not broke by their Motion". Other insects were to be "put up together in ye best rectified Spirit of wine [ethyl alcohol] ye bottle being well corkt having a ps [piece] of hoggs bladder ouer it which hauing been steept in water . . . being hard tyed will ioyne uerry close"[4]. When the gardener James Reed went botanizing to Madeira and the Barbadoes in 1689 similar instructions were given[5]; un-

fortunately Courten did not indicate how the insects were to be taken.

John Ray (1627-1704/5) was accumulating the observations to be published posthumously as the *Historia Insectorum* (London, 1710) long before 1690, but not until that date was he able to give earnest attention to the collection and rearing of insects. Charles E. Raven's chapter about Ray's work in entomology leaves little to be said of him[6]. An examination of the notes for the *Historia* and the work itself shows that Ray used the chip-box (*pixidula abiegna*), breeding cage and beating stick; his numbered specimens were apparently mounted on pins in the Continental fashion and kept in store boxes. He does not mention the use of a net but as some of his descriptions are taken from insects captured in flight, we may assume that some contrivance was used[7].

In the matter of collecting methods Ray was much less communicative than his younger friend James Petiver (c. 1663-1718), apothecary at the sign of the White Cross, Aldersgate Street, London. Petiver's lucrative trade and occasional medical practice allowed him ample leisure to indulge in natural philosophy. As early as 1689 he began a voluminous correspondence with English and European *savants*, ship captains, surgeons, travellers and overseas residents who assisted in the formation of his cabinet and provided specimens to be described in the *Musei Petiveriani Centuria Prima* to *Decima, Gazophylacium Naturæ & Artis* and a host of other illustrated botanical and zoological volumes which included the first work devoted entirely to the English Lepidoptera, *Papilionum Britanniæ Icones, Nomina* &c. [London, 1717][8]. Although usually remembered as a botanist, Petiver made a more significant contribution to English entomology than anyone before him except Ray, and his manuscripts are our primary source for the collecting methods used at the end of the seventeenth century.

A list of MS. instructions for overseas travellers dated 17th February 1690, reminiscent of Courten and probably derived from his advice, indicates that plants should be dried between the pages of a large book or in a quire of paper; their fruits would travel well in brine, as would fishes and similar creatures. "Insects as Spiders flyes Butterflyes and Beetles" should be preserved "by thrusting a pin thr[ough] their Body and s[t]ick[ing] them in your ha[tt]until you get a board [i.e. the ship] then pin them to ye wall of your cabin or ye inside lidd of any Deal Box so yt they may not [be] crushed"[9]. It is interesting that when at the Cape of Good Hope eighty-five years later, Linnaeus' student Andre Sparrman used a similar method, transfixing insects with a pin and arranging them round the outside of his hat; in 1826 Kirby and Spence suggested that "the cavity of a modern hat, if lined with cork, might be made a very useful receptacle for these animals in a long excursion", although they did "not recommend such an exhibition in a civilized region"[10]. As late as 1840 William Swainson wrote from his own experience that when collecting in tropical countries the entomologist would frequently fill his field boxes and "be compelled to bring home the remainder of his game stuck both on the inside and outside of his hat"[11]. Petiver recommended the method to a number of correspondents in the early 1690's, suggesting that "ye Crown" was the best part of the hat to receive the specimens. At various times he furnished friends with collecting boxes made of deal (which, as his correspondence shows, did not withstand the ravages of tropical ants) and several letters mention the pill box as a useful piece of field apparatus.

By 1695 Petiver was supplying overseas travellers with a small collecting outfit, including quires of brown paper for plants, pins and boxes for insects, and wide-mouthed bottles for animals to be preserved in brine or spirits. Above all, accurate data was to be kept if possible. Petiver's insistence on data recurs throughout his correspondence; observations of the living specimen were sought, as how it held its wings at rest, how it was taken, on what plant, at what time of day, and of course, the locality. He suggested keeping a field notebook, and his own MS. volume of insect observations remains in the Sloane collection. This is of great interest as by furnishing quite accurate and extensive collection data for many recognizable species of insects, it gives us an idea of distribution at the end of the seventeenth century and helps to confute the old dictum that our early entomologists cared little for such observations. Like Ray, Petiver requested observations of insect metamorphosis and descriptions of various stages from his friends; Martin Lister's edition of Johann Goedart's *De Insectis* (London, 1685) was suggested as a model.

By the mid-1690's Petiver, working independently from Ray, had reared a great number of Lepidoptera, and his letters of advice to his friends give us some insight into his methods. As example, in March 1694/5 he sent a copy of Lister to his friend John Pool, directing him to put "into any small Gally pott, Pill box or Glass w[ha]tever Catterpillar you find[,] feeding it with ye leaves of the same plant you find it on till it changes of it selfe". Pool was to record "ye same remarks on it as in ye Book viz. on what plant yu find it & ye time you tooke it att als[o] when it changed & hatcht"[12].

In the summers of 1695 and 1696 Petiver devoted a large part of his time to collecting insects and observing them in the field. As his experience grew his methods became less primitive. In an undated letter written in the spring of 1696 he explained that "When Occasion gives me leave & Fair weather presents I visitt the neighboring Feilds, Woods, hills & Rivers thus accoutred[:] I take with me my Pincushion fully stuck with pins of severall sizes, a long Box for Insects with 2 or 3 Smaller for w[ha]t odd things may come in my way, with a large Collecting book into w[hi]ch besides ye Plants yu find you may put all such Butterflys or Moths" which were not thick bodied. The insects were placed in the book with expanded wings after they had been killed "by gently crushing their head & body betwixt yr fingers w[hi]ch will prevent their fluttering". Thick bodied moths were to be pinned and placed in the box; other insects could be drowned in spirits and carried home in bottles[13]. Petiver's methods were to be little changed over the next hundred and fifty years; even the pincushion was carried by some nineteenth-century entomologists. Swainson suspended one from his neck or button-hole, and may have been the last to suggest use of this curious appendage[14].

Petiver used the beating stick, and frequently mentioned capturing insects by beating trees. As early as 1695 he advised John Scampton to collect moths "by going into yr adjacent yard, & Gardens with a Candle & Lanthorn [i.e. lantern] ab[ou]t w[hi]ch you will find ym come buzzing"[15]. The two methods were combined later in the season, and in a letter of March 1695/6 Scampton was told to go out after sunset with a "Cleer lanthorn & large Candle (a dark lanthorn with a convex light like ours in London would be much ye better) w[hi]ch carry with yu into yr Gardens

& Closes & sett it any where standing by it whilst another goes ab[ou]t to shake ye Trees Bushes & Shrubbs w[hi]ch will fright ym out, & cause ym imediately to repair to ye light when yu may easily take ym". Petiver had "seen very large & Curious Moaths taken after this manner", more frequently in midsummer; this seems to be the first record of the use of a mobile light for attracting nocturnal insects[16].

By 1697 Petiver's rearing methods had grown considerably more sophisticated, probably due to his association with Ray and the Braintree apothecary and lepidopterist Samuel Dale. The notebooks and correspondence in the Sloane collection show that he kept female insects to obtain ova which he hatched out. Larvae were most often obtained by searching plants and beating. A letter of March 1697 gives the following directions:

> On whatever plant yu find a Catterpillar feeding take as many of them as you think convenient with a handful or 2 of ye leaves or yt part of ye Plant yu find y eat. When yu have brought ym home set them [in] yr Study window or any other convenient place under a drinking Glass with its mouth downward with ye aforesaid leaves ye w[hi]ch you will see y will soon begin to feed on, y must be supplied every day with fresh food untill you find y will eat noe more, soon after w[hi]ch y will prepare for changing by turning ymselves into an Aurelia or coffin, some of w[hi]ch are naked or smooth, others (like ye Silke worm) covered over with a silken webb. these [i.e. the pupae] yu must clear from ye remaining leaves, & only lay ym as before under ye same Glass[17][.]

At the beginning of the eighteenth century Petiver's overseas correspondence had become so large that he found it convenient to send a printed list of directions for collecting objects of natural history with his many requests for specimens. Two states of the sheet are preserved in the British Museum, and there seems to have been an earlier one which has not survived. The undated list 456.e.11 (1*), Lisney 62, is titled *Brief Directions for the Easie Making, and Preserving Collections of all Natural Curiosities.* It explains that "*Insects,* as *Beetles, Spiders, Grasshopper* [*sic*], *Bees, Wasps, Flies,* &c., these may be Drowned altogether as soon as Caught[,] in a little wide Mouth'd Glass, or Vial, half full of *Spirits,* which you may carry in your Pocket". Butterflies and moths which "have mealy Wings, whose Colours may be rub'd off, with the Fingers, these must be put into any small Printed Book, as soon as caught, after the same manner you do ye *Plants*".

It will be noted that a net is not mentioned. In fact, although Petiver wrote frequent instructions for collecting and often compiled lists of equipment to be taken into the field, he did not record any sort of net until 1711, after which the device was mentioned frequently. A curious problem is posed when we recall that Ray is also silent on the point. Fifty species of British butterflies and a great number of moths had been recorded by 1711, and the bag-net (the sort we use to-day) seems to have been in fashion on the Continent before 1700. Surely Ray, Petiver, William Vernon and the host of other English collectors operating at the turn of the century must have used some sort of device for catching flying insects; we can hardly imagine taking *Apatura iris* without a net in

the days before bait. The traveller John Starrenburgh wrote Petiver from the Cape of Good Hope in January 1700/1 for "a Small nett to Catch butterflies and glass Vialls wide mouthd to breed em from Caterpillars"; presumably the "nett" he desired was of the bag type[18]. It is hard to understand why, if the bag-net was used in England at an early period, it was later discarded for the cumbrous clap or bat-fowler design so popular in the eighteenth century. On the other hand if such an involved device as the clap-net was the first to be used, Petiver might well have explained its construction, and he did not.

Certainly Petiver was using a net in 1711, of a pattern he seems to have discovered during his voyage to Holland in the summer of that year—the only occasion on which he ever left England. His "Muscipula" or "Fly-catcher" was surely not a clap-net, and must have been either a bag or forceps-net as it had at least one hoop of wire. His vague descriptions leave us in doubt as to whether a second hoop was present to indicate the forceps design; once he wrote of the device as a "pair", but he could have meant either a forceps or two bag-nets. The forceps or scissors-net probably originated on the Continent and was widely used in Germany, France and England during the eighteenth and nineteenth centuries; some hymenopterists employ a similar design to-day. The original pattern resembled a large pair of scissors or anatomical forceps with gauze-covered hoops at each tip. Kirby and Spence recorded Continental use of forceps with hoops as large as ten to twelve inches in diameter, and explained that "when you aim at an insect with your forceps, you must expand the leaves [i.e. hoops] as much as possible, and cautiously approach your prey; and when within reach, close them upon it suddenly, including the leaf or flower on which it rests"[19].

The introduction of the "Muscipula" to England was the result of a collaboration between Petiver and the water-colour artist Eleazar Albin, still a young teacher of painting in 1711 who had for several years been executing coloured pictures of insects for such noted collectors as Hans Sloane, Petiver, Joseph Dandridge and Mary, duchess of Beaufort—an endeavour that was to lead in 1713 to the inception of *The Natural History of English Insects*, issued in parts to 1720[20]. The first mention of the net is in a note of December 1711 sent by Petiver to Albin's home "next ye Green Man neer Maggots Brew-house in Golden Square", Soho, asking for "w[hat] Muscipula or Fly-takers ye Man has done, w[hi]ch I desire yu will also bring with you"[21]. Albin's answer appears elsewhere in the Sloane MSS; on 19th January he reported that he had "sent the man with the takers according to your Order haveing given him the Shilling sent"[22]. A note in the margin identifies the craftsman as "John Plim Blacksmyth in Broad Street neer Poland Street St James". Further correspondence between Petiver and Albin does not mention the "Muscipula", which Petiver had decided to produce in quantity for shipment to his friends. He could not get them made cheaply enough in London, and soon contacted a country acquaintance, the Quaker apothecary Richard Morris of Rugeley, Staffordshire.

Morris found a blacksmith willing to produce the "fly-catchers" for four shillings per dozen, but the price did not satisfy Petiver, who when acknowledging the first shipment complained that as he was purchasing the devices in quantity, they should not be so expensive. Instructions were also given to "let some be much larger on ye Circumference of their

Wyers"[23]. Morris answered that the nets were worth the price, "much lighter than ye London pattern, and as cheap as one can expect"[24]. While the correspondence continued Petiver shipped the nets overseas with instructions for their use, hoping to secure more insects for his cabinet through their use. An early pair went to Thomas Grigg of Parham Plantation, Antigua, with a note explaining that the device could be operated by a servant; "All Butterflies and Moths he must pinch on ye Head while in ye Net to kill ym. This will prevent their fluttering w[hi]ch spoils their wings"[25]. Nets and similar instructions were sent to France, Italy, Minorca, St. Helena, Massachusetts and a host of other places. Undoubtedly Petiver was pleased with his new method, for in the frequent letters written to stimulate the shipment of specimens, he often inquired about results with the "Muscipula". When no insects came he adopted a tactic revealed in a letter of 1713 to Mrs. Rachel Grigg: "I should be glad to see . . . w[ha]t Butterflies & other Insects yr Negroes have gott with my Flycatchers, & yt I may not longer be disappointed I have sent you an other pair"[26]. Although the forceps had become popular enough in the 1760's to be included in Moses Harris' *The Aurelian,* Benjamin Wilkes does not mention them at all in his account of collecting methods in *The English Butterflies and Moths* (London, [1749]). This is curious as Wilkes' entomological mentor was Joseph Dandridge who, being a close friend of Petiver, must have been familiar with the device. However Wilkes recommended only the clap-net.

Petiver's correspondence and published works indicate no further addition to his *modus operandi* after the "Muscipula" of 1711. As for preservation, by this time he had adopted the unusual method evident in the fragment of his collection of Lepidoptera still remaining in the British Museum of Natural History. The insects were 'sandwiched' between thin layers of mica and bound with gummed paper in a fashion similar to that of modern colour slides; the data was written in ink on the paper bindings and the frames were apparently stored in boxes[27]. This was surely an advance over the primitive seventeenth-century method of gluing insects directly to the pages of a blank book, as seen in the Adam Buddle and Leonard Plukenet collections, but there is evidence that like Ray, Petiver had once used the Continental way of mounting insects on pins and keeping them in store boxes; several letters from the 1690's indicate that this was the case. Petiver discarded pins, probably because of the constant depradations of mites and other creatures in the era before disinfectants. The frames were pest-proof for the most part; although some of his remaining specimens have been partially consumed most have kept remarkably well over two and a half centuries, while the pin-mounted accumulations of his contemporaries have perished.

Albin's methods were somewhat similar to Petiver's, although he preferred store boxes to frames and was clever enough to develop disinfectants to ward off pests. Petiver recorded that the painter rubbed "ye bottom of ye Boxes . . . with Oyl of Spike" and embalmed larger insects with mixtures of spices[28]. His rearing procedure was more modern than Petiver's; like Ray he used cages instead of inverted glasses. When rearing *Cossus cossus* he "was obliged to keep it in a tin Box with some of the *Willow wood,* for he eat his way through a Box of Wood I had put him in before"[29]. The larva of *Stauropus fagi* was "kept in a *Box* with some of the Branches of the *Hasle* set in *Bottles* with Earth under

them to facilitate its Change"[30]; coleopterous larvae were brought through in "a Pot of Earth with some of the Roots of Grass and other Plants"[31]. An attempt to keep lepidopterous pupae in a natural condition by "putting them in a *Bottle* in a hole in the *Ground* to keep them moist" led to failure when "a flood of Water coming" drowned Albin's hopes[32].

The publication of Albin's *Natural History of English Insects* marks a natural end to the period that saw the birth of scientific entomology in England. Ray and Petiver were dead in 1720, as were Martin Lister and William Vernon; Albin would soon turn to other interests. Over twenty years would pass before the "renaissance" of Benjamin Wilkes, James Dutfield and Moses Harris. P. B. M. Allan has suggested that the equipment of this later era "must have been evolving for many years previously"[33] and we have seen that except for a few items, all the classic paraphernalia of the eighteenth-century collector's *repertoire* can be traced to an earlier day. Yet several questions remain; we do not know what sort of net was used by seventeenth-century English entomologists, and both the nature and fate of Petiver's "Muscipula" remain a mystery. If any answers are to be had, they will be found in the numerous manuscript sources of the period, both in public and private hands, that have not been explored by historians of entomology.

[The second part of this study will trace the development of methods and equipment from 1720 to the publication of Moses Harris' *The Aurelian* in 1766.]

[1]There is a summary of Courten's life in the *DNB*. See also Charles E. Raven, *John Ray, Naturalist* (London, 1950), *passim*. and the volumes of Courten MSS. in the Sloane collection, British Museum. J. E. Dandy discusses him in *The Sloane Herbarium* (London, 1958), 115-117, and there is an interesting account in Andrew Kippis, ed., *Biographia Britannica* IV (London, 1784), 334-353.

[2]Brit. Mus. MS. Sloane 3997, f.6v.

[3]The process, titled "Pour Conserver les Insectes", is as follows: "Faites quantité de petits trous dans le Couvercle d'une Boëte de bois: Rangez apres dans cette Boëte vos Insectes les separant avec une épingle en sorte qu'ils ne puissent pas s' entre toucher. Jettez-y en suite du souffre mis en poudre sur les charbons, et tenez votre Boëte d'un tel sorte que la fumée y puisse entrer par les petits trous. Mettez la Boëte renversée sur une table pour empecher la fumée de sortir: Et ainsi les Insectes mourront et se conservent dans leurs Couleurs plusieurs années.

Mettez dans le fondement de vos Insectes une épingle fort longue et qui pénetre iusqu'au milieu du Corps. Attachez le papillion ou l' Insecte avec une autre épingle au bord d'une table, et tenez une chandelle allumée au bout de l'Epingle que vous avez mise au fondement de l'Insecte iusqu 'á ce qu'elle devienne toute chaude; ce qui desseichera. L'Insecte et en emportera toutes les humidites qui pourroient autrement, causer de la pourriture. Tournez fort souvent l'Épingle dans notre Insecte a fin qu'elle ne s'attache pas dans le Corps. C'est de cette sorte que l'on conserve les plus gros papillions et autres Insectes en sorte que le vermine ne peut pas s'y mettre si facilement". Sloane 3997, f.7r, transcribed as written except where U has been used for V.

[4]Sloane 3962, f.186r.

[5]Sloane 3962, f.188r.

[6]Raven, *op. cit.*, 388-418.

[7]See *Ibid.*, 394, for references to the *Historia Insectorum*.

[8]References to Petiver as an entomologist are scattered and generally unsatisfactory. The present author is preparing the introduction to a forthcoming facsimile edition of the *Papilionum Britanniæ*, in which Petiver's contributions to English entomology will be summarized. There are accounts in the *DNB* and the usual sources for the history of botany.

The best general treatments are by Sir James Edward Smith in Abraham Rees, ed., *The Cyclopædia* (London, 1819), article "Petiver, James", and in H. Trimen and W. T. T. Dyer, *Flora of Middlesex* (London, 1869), 379. See also Arthur A. Lisney, *A Bibliography of British Lepidoptera* (London, 1960), 42-64, and the Petiver MSS. in the Sloane collection, British Museum. Raymond Stearns, "James Petiver, Promoter of Natural Science", American Antiquarian Society *Proceedings* LXII (October, 1952), 243-365, illustrates Petiver's rôle as patron of overseas collectors. The most recent treatment of Petiver is in Dandy, *op. cit.*, 175-82.

[9]Sloane 3332, f.2r-v.

[10]William Kirby and William Spence, *An Introduction to Entomology* IV (London, 1826), 526-7.

[11]William Swainson, *Taxidermy* (London, 1840), 17.

[12]James Petiver to John Pool, 9th March 1694/5, Sloane 3332, ff.112r-113r.

[13]Petiver to Samuel Brown, undated, Sloane 3332, ff.176r-177r.

[14]Swainson, *op. cit.*, 16.

[15]Petiver to John Scampton, 4th July 1695, Sloane 3332, f.128v.

[16]Petiver to John Scampton, 17th March 1695/6, Sloane 3332, f.208r.

[17]Petiver to George Lewis, 2nd March 1697, Sloane 3332, f.263r-v. In the same letter Petiver suggests "Rack or brandy" as the best preservative for lepidopterous larvae.

[18]John Starrenburgh to Petiver, 20th January 1700/1, Sloane 4063, f.74r-v.

[19]Kirby and Spence, *op. cit.*, 521.

[20]There is a brief notice of Albin in the *DNB*, and he is mentioned in Thieme and Becker, *Allgemeines Lexikon der Bildenden Künstler* (Leipzig, 1907-50), I, 227. His date of birth is unknown. In the preface to *English Insects*, published in book form in 1720, he explained that "Teaching to Draw, and Paint in Water-Colours, being my Profession, first led me to the observing of *Flowers* and *Insects*, with whose various Forms and beautiful Colours I was very much delighted, especially the latter, several of which I painted after the Life, for my own Pleasure". He met the noted entomologist Joseph Dandridge, painted for him and thus received work from other collectors. The Duchess of Beaufort suggested *English Insects* and helped to collect subscriptions from her wealthy friends. *Proposals for Printing by Subscription a Natural History of English Insects* was issued on 1st January 1713/4 with an uncoloured specimen plate, and the first fifty plates of the work appeared before the end of 1714. Lisney, *op. cit.*, 78, stated that he did not know the reason for the delay in printing the rest of the work. It was probably caused by the death of Albin's patroness the Duchess of Beaufort. Subscriptions lagged without her influence and Albin was forced to resume teaching because of his large family. *English Insects* appeared entire in 1720 and went through five editions. A curious transcript in Petiver's hand gives details of Albin's methods for grinding and mixing colours; as example his formula for vermilion was to wash the dry pigment "in 4 waters then grind it in boys Urine 3 times, yn gum it [i.e. add gum to it] & grind it in Brandy wine"; Sloane 3338, f.11v. Albin's later publications on spiders, birds and fish are listed in the *DNB*.

[21]Petiver to Eleazar Albin, 31st December 1711, Sloane 3338, f.8v.

[22]Albin to Petiver, 19th January 1711/12, Sloane 4065, f.15r.

[23]Petiver to Richard Morris, 2nd October 1712, Sloane 3338, f.95r.

[24]Morris to Petiver, 3rd November 1712, Sloane 4065, f.72r.

[25]Petiver to Thomas Grigg, 25th March 1712, Sloane 3338, f.38r.

[26]Petiver to Rachel Grigg, 20th October 1713, Sloane 3339, f.81r.

[27]In 1738 the frames were collected and mounted in folio volumes by Cromwell Mortimer, secretary of the Royal Society. Several late eighteenth-century drawers in the cabinet of Petiver curios, also at the British Museum of Natural History, contain insects individually sealed in double-glazed and papered wooden frames. Although these have Petiver's labels affixed it is difficult to determine whether he mounted them in that manner or the labels were transferred from earlier mica 'sandwiches'. There is evidence that Petiver used glass as well as mica, for when sending some butterflies to the botanist Richard Richardson in June 1702 he suggested putting them "into frames, with glasses over them, which you may cheap and easily procure in the country, they will keep many years; and, if at any time you find lice or worms in them, you may easily take out the glass